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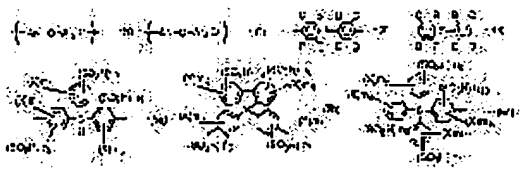
(54) AROMATIC POLYARYLENE ETHER COMPOUND CONTAINING SULFONIC ACID GROUP AND POLYMER ELECTROLYTE MEMBRANE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a compound having excellent ionic conductivity, water- resistance and heat-resistance by controlling the amount of introduced sulfonic acid group and provide a resin composition of the compound and an ionic conductive film.

SOLUTION: The polyarylene ether compound having a sulfonic acid group contains a repeating unit expressed by formula (1) (Ar1 is a group of formula (3); Ar2 is a group of formula (4)) and a repeating unit expressed by formula (2) (Ar3 is a group expressed by either one of formulas (5a) to (5c); A is ketone group or sulfone group; B, C, D and E are each H, a 1-6C aliphatic group, nitro group, chlorine, bromine or iodine provided that at least two of B, C, D and E are H; and F is direct bond, sulfone group, ketone group, ether group or a 1-6C alkylidene group).



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[Date of sending the examiner's decision of rejection]	
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[Date of requesting appeal against examiner's decision of rejection]	
[Date of extinction of right]	

JAPANESE [JP,2003-147074,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

* NOTICES *

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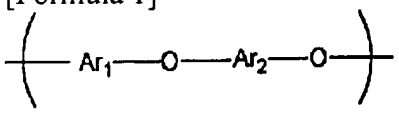
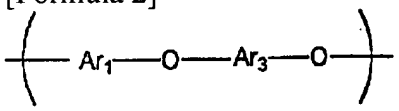
CLAIMS

[Claim(s)]
[Claim 1] The sulfonic group content aromatic series poly arylene ether compound characterized by including the repeating unit expressed with the following formula (1), and the repeating unit expressed with the following formula (2).
[Formula 1]



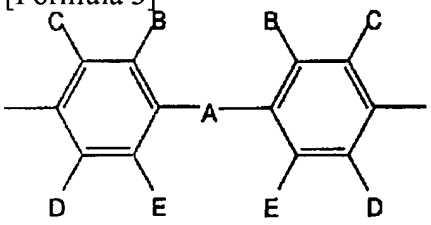
.....(1)

In [type (1), Ar1 shows the joint unit expressed with the following formula (3), and Ar2 shows the joint unit expressed with the following formula (4).]
[Formula 2]



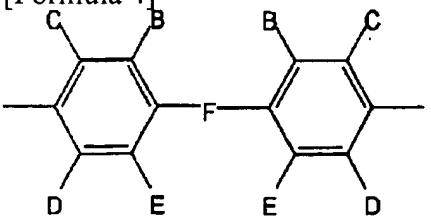
.....(2)

In [type (2), Ar1 shows the joint unit expressed with the following formula (3), and Ar3 shows the joint unit expressed with the following formula (5a) - (5c) either.]
[Formula 3]



.....(3)

In [type (3), A shows a ketone group or a sulfone radical. B, C, D, and E are the aliphatic series radical containing hydrogen or 1-6 carbon, a nitro group, chlorine, a bromine, and iodine, and at least two sorts in B, C, D, and E consist of hydrogen.]
[Formula 4]

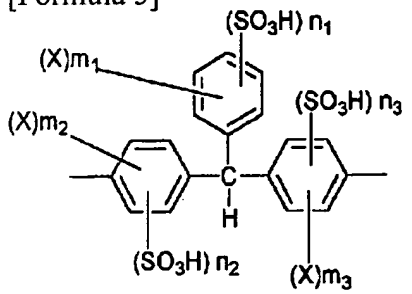


.....(4)

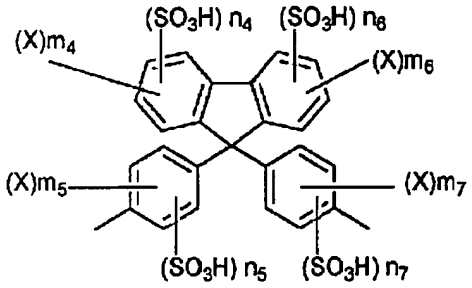
In [type (4), F shows direct coupling, a sulfone radical, a ketone group, a ether group, or the alkylidene radical of carbon numbers 1-6. B, C, D, and E are the aliphatic series radical containing hydrogen or 1-6

carbon, a nitro group, chlorine, a bromine, and iodine, and at least two sorts in B, C, D, and E consist of hydrogen.]

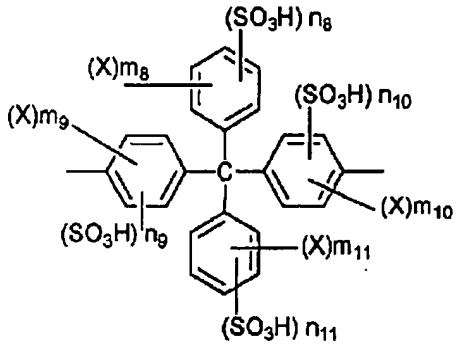
[Formula 5]



.....(5a)



.....(5b)



.....(5c)

In [type (5a) - (5c), n1-n11 are the integers of 0-2, and any groups of (n1+n2+n3), (n4+n5+n6+n7), and (n8+n9+n10+n11) are integers other than zero. Moreover, Substituent X is the alkyl group containing 1-3 carbon, the alkoxyl group containing 1-3 carbon, a hydroxyl group, the amino group, an acyl group, hydrogen, or a halogen, and ms+ns is an integer expressed with 0 <=ms+ns<=5 (8 s= 1, 11) or 0 <=ms+ns<=4 (s= 2, 3, 4, 5, 6, 7, 9, 10).]

[Claim 2] The sulfonic group content aromatic series poly arylene ether compound according to claim 1 characterized by the sulfonic group having combined with each one aromatic series ring of every in aforementioned formula (5a) - (5c).

[Claim 3] The sulfonic group content aromatic series poly arylene ether compound according to claim 1 or 2 characterized by including repeating units other than the repeating unit expressed with the aforementioned formula (1) or (2).

[Claim 4] A sulfonic group content aromatic series poly arylene ether compound given in either of claims 1-3 characterized by the sum total (1-alpha) of the mole ratio of repeating units other than the

repeating unit expressed with the sum total alpha of the mole ratio of a repeating unit expressed with the aforementioned formula (1) or (2), the aforementioned formula (1), or (2) filling the relation of 1 <=alpha/(1-alpha) <=99.
[Claim 5] A sulfonic group content aromatic series poly arylene ether compound given in either of claims 1-4 to which mole-ratio beta of the repeating unit expressed with the aforementioned formula (1) and the mole ratio (1-beta) of the repeating unit expressed with the aforementioned formula (2) are characterized by filling the relation of 0.5 <=beta/(1-beta) <=10.
[Claim 6] a logarithm -- a sulfonic group content aromatic series poly arylene ether compound given in either of claims 1-5 characterized by viscosity being 0.1 or more.
[Claim 7] The resin constituent characterized by the sulfonic group content aromatic series poly arylene ether compound given in either of claims 1-6 being mixed by resin.
[Claim 8] The resin constituent according to claim 7 characterized by under 100 mass % being constituted from a sulfonic group content aromatic series poly arylene ether compound of a publication more than 50 mass % of the whole resin constituent by either of claims 1-6.
[Claim 9] Polyelectrolyte film characterized by containing the compound of a publication in either of claims 1-6.

[Translation done.]

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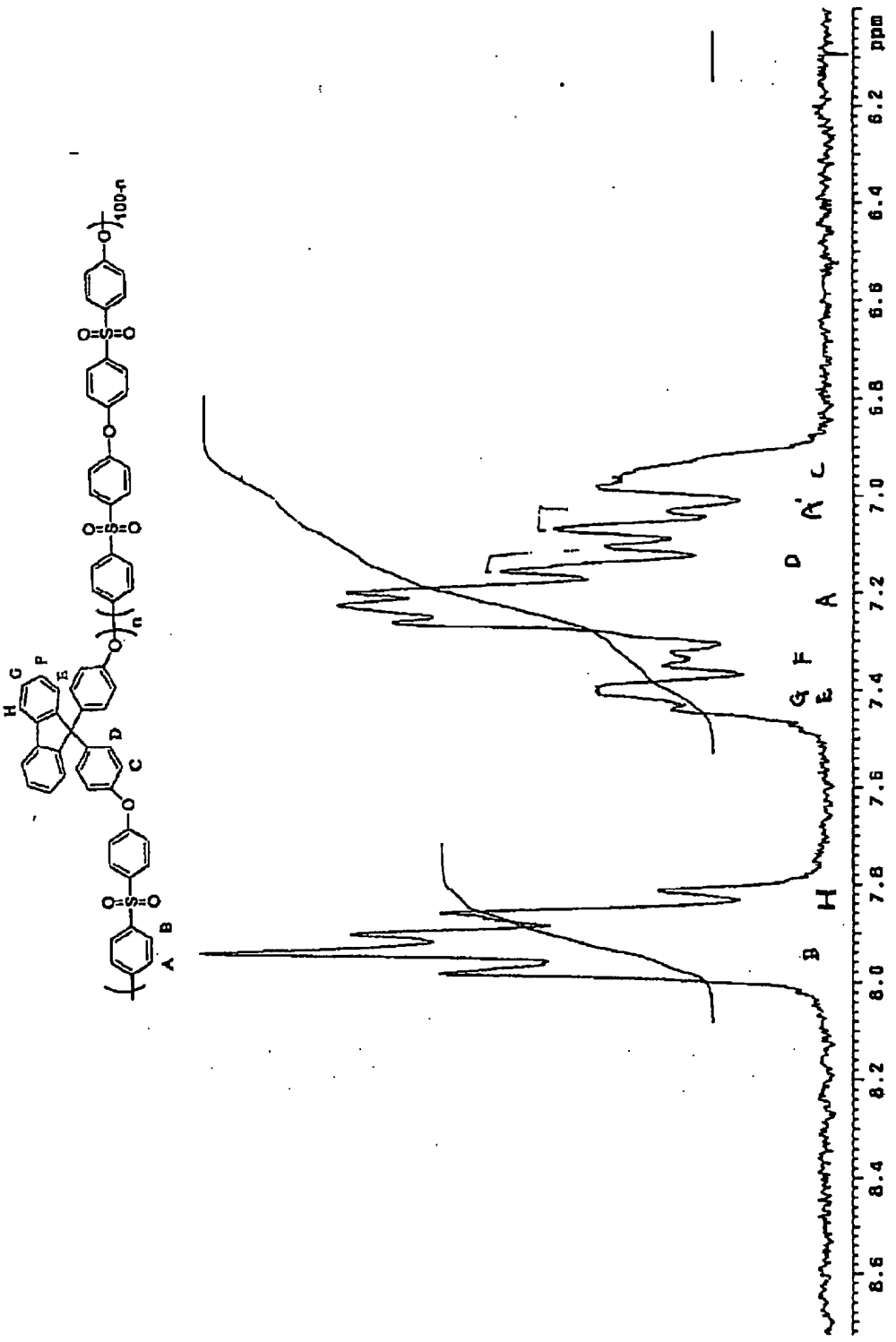
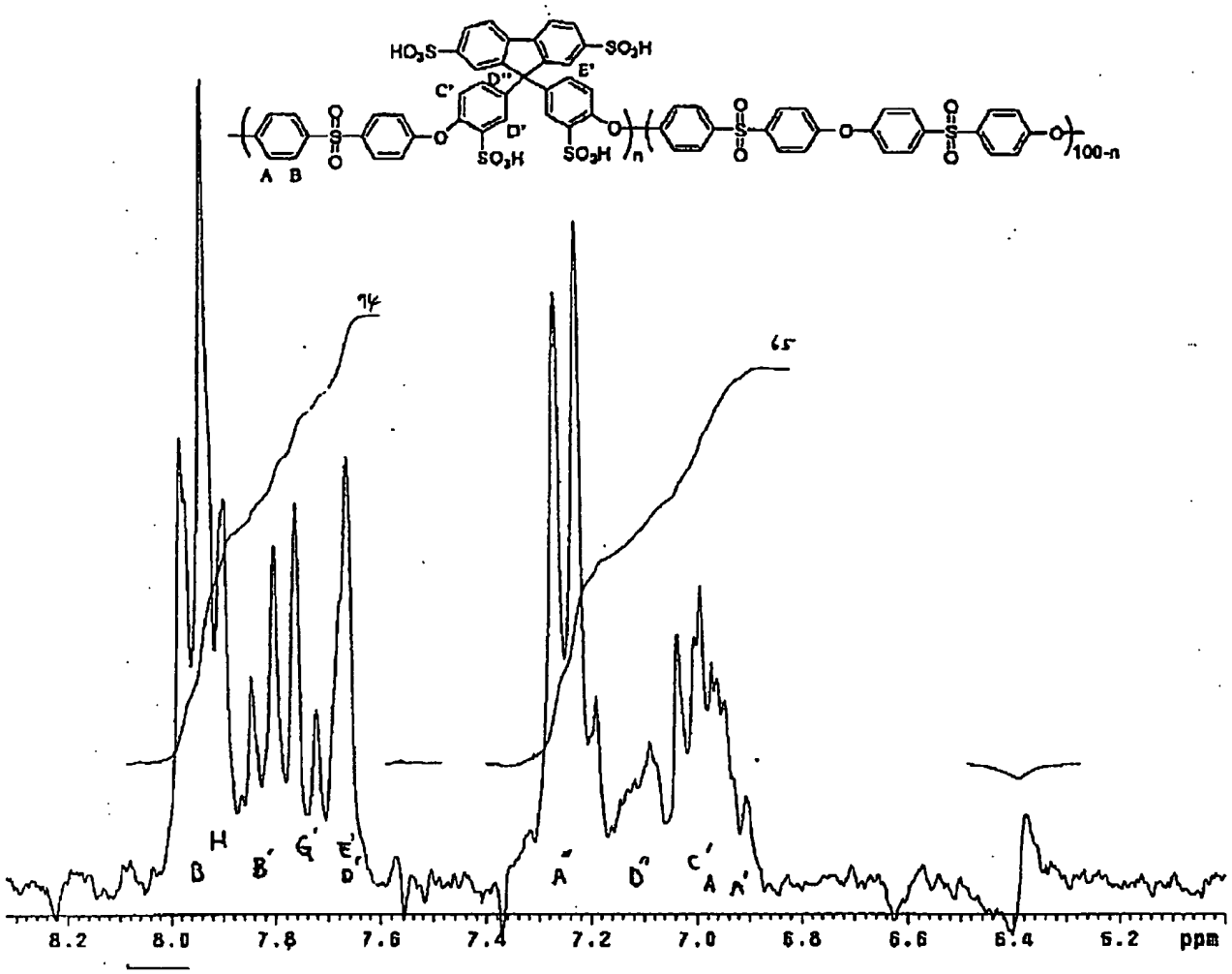
DRAWINGS

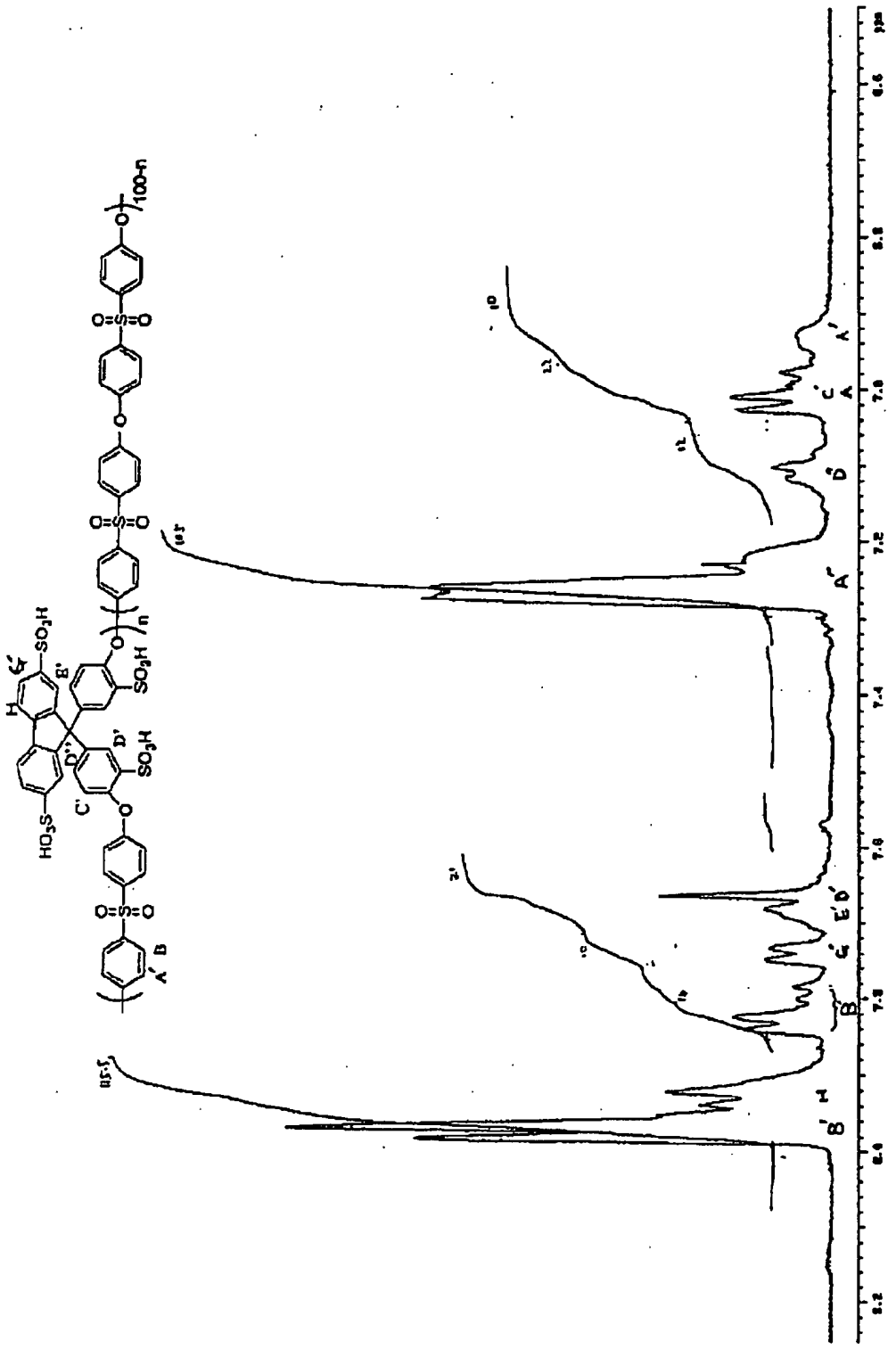
[Drawing 1]



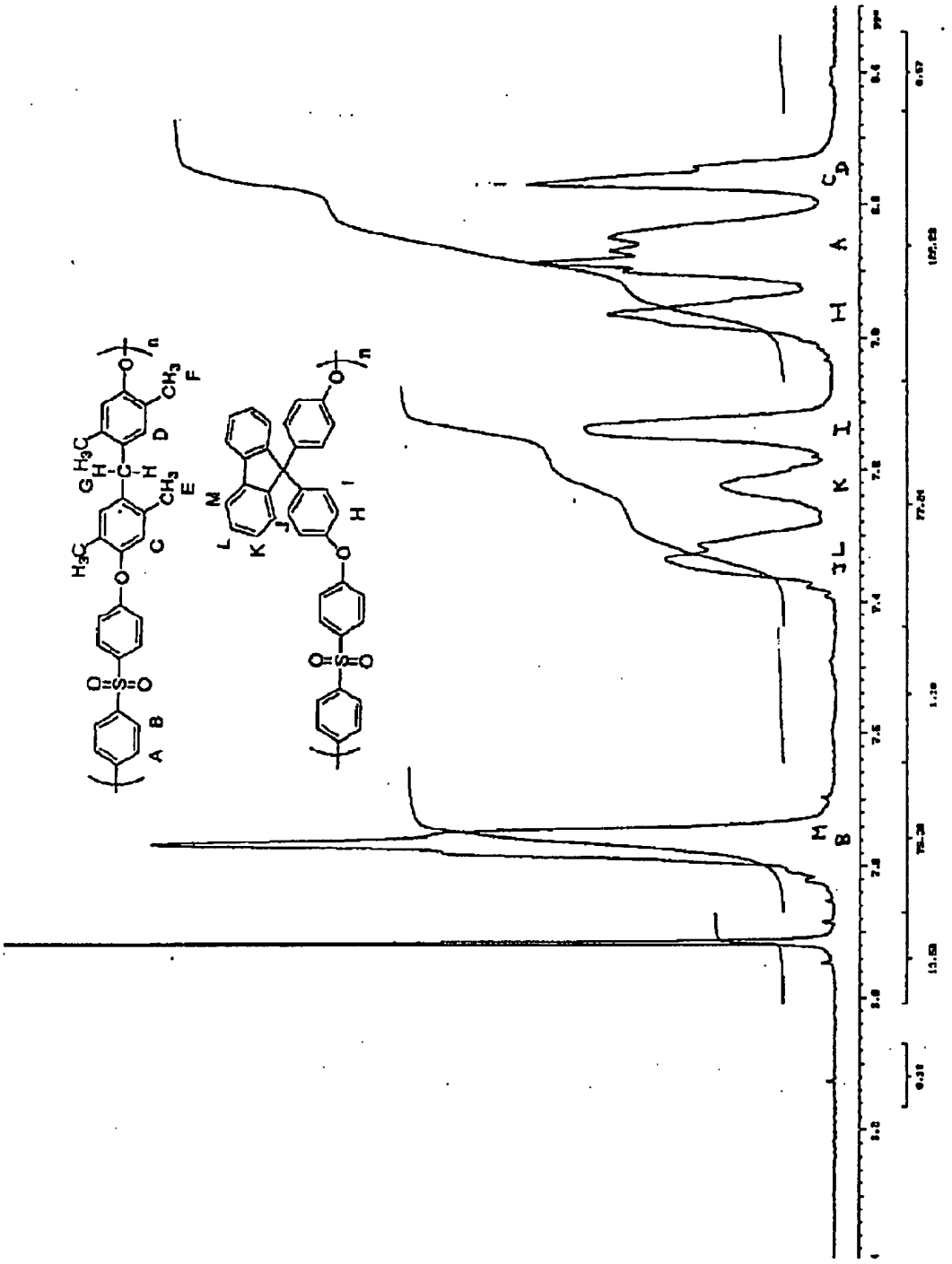
[Drawing 2]


HO3S
SO3H
SO3H
SO3H
SO3H
A B
n
100-n
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
6.2
ppm

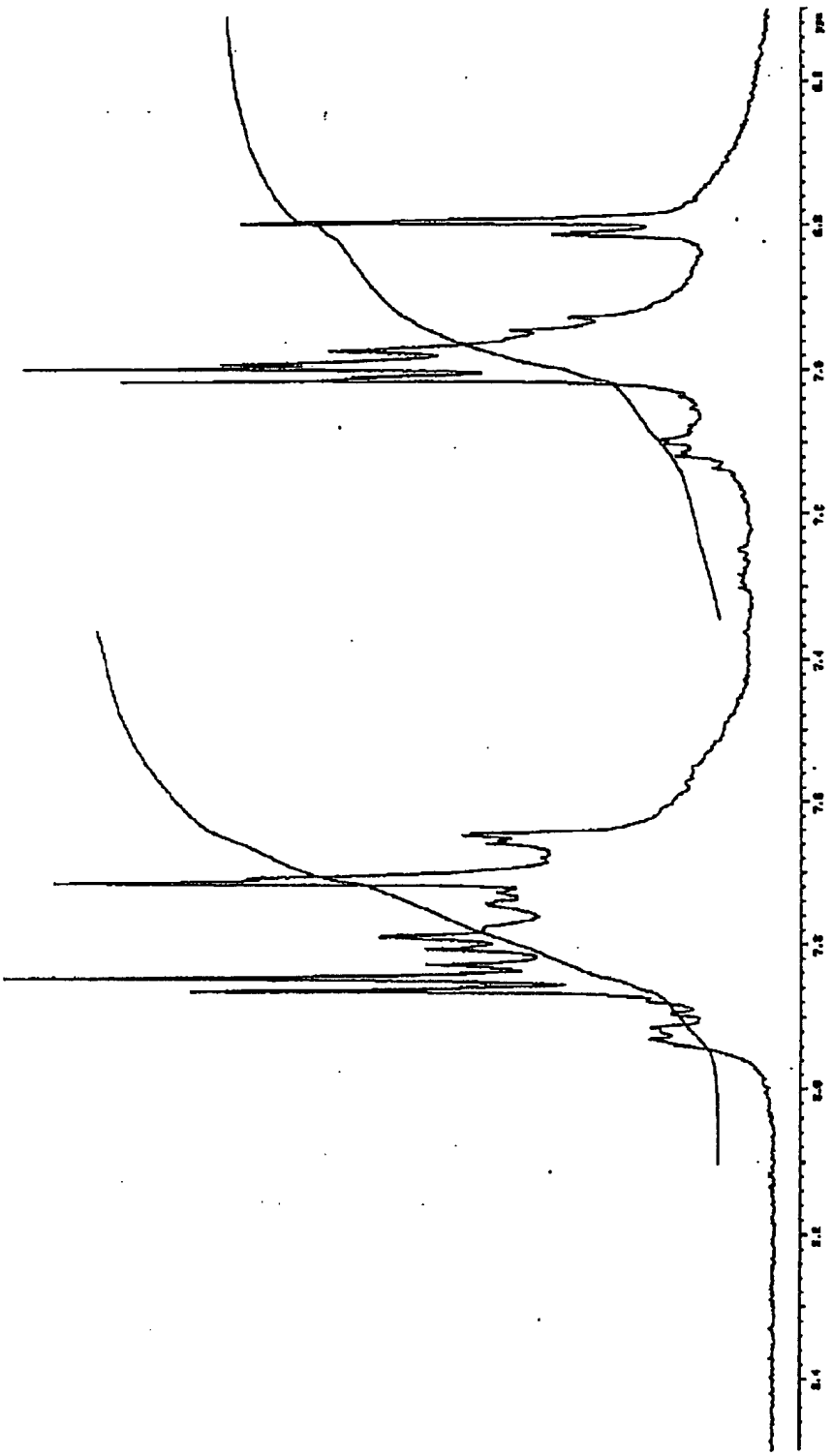
[Drawing 3]



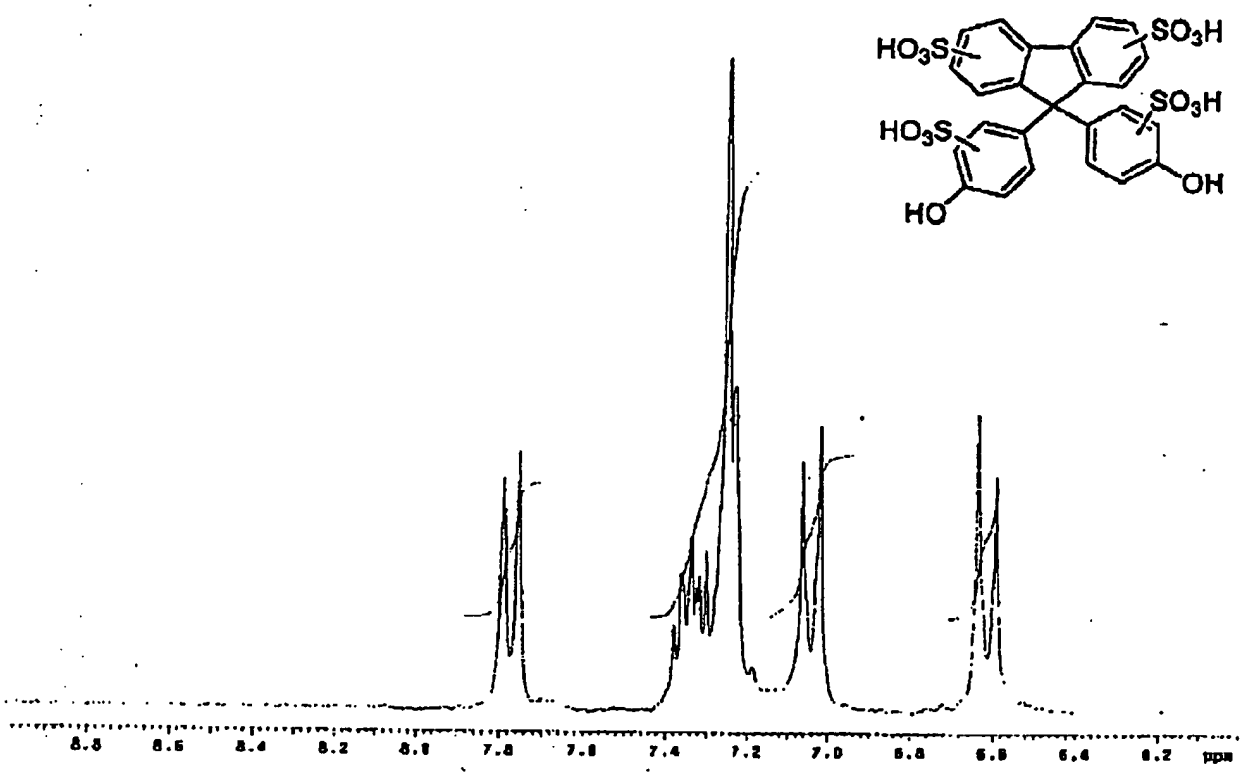
[Drawing 4]



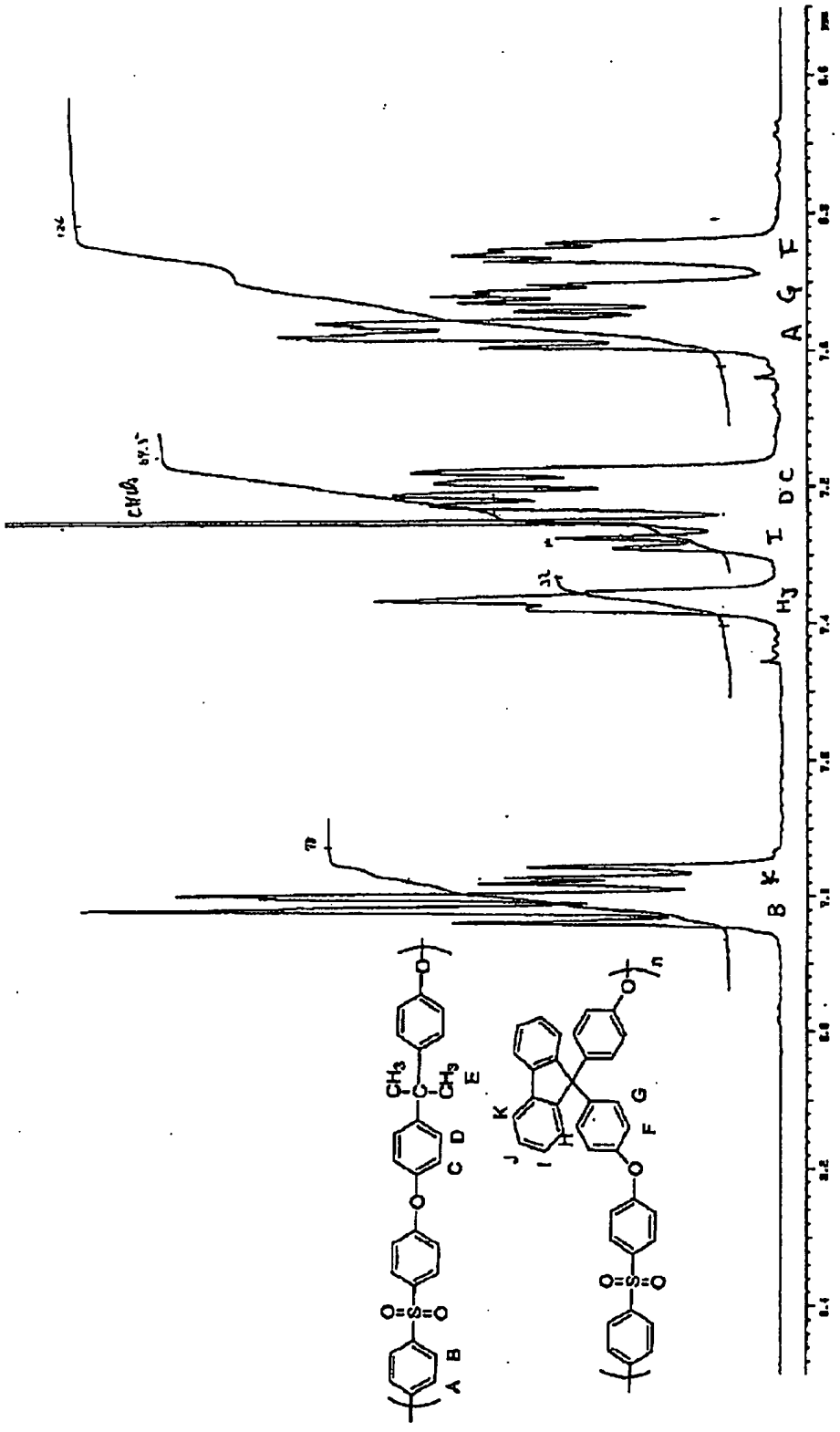
[Drawing 5]



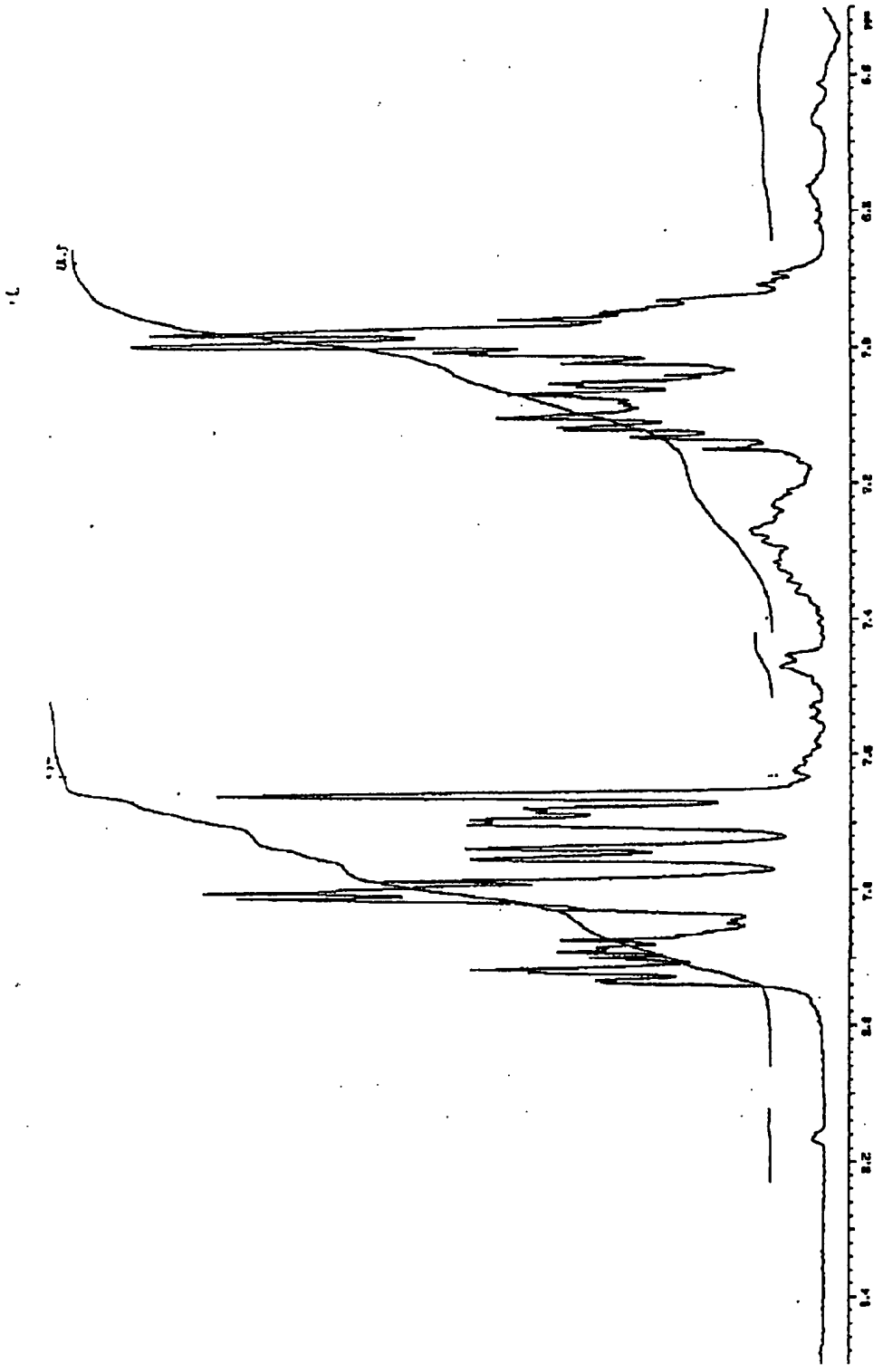
[Drawing 6]


HO3S
SO3H
SO3H
HO3S
OH
HO
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
6.2
ppm

[Drawing 7]



[Drawing 8]



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